

## United Technologies Research Center

Contact: David R. Polak ( [polakdr@utrc.utc.com](mailto:polakdr@utrc.utc.com) )

UTRC made significant progress in cabin noise prediction and jet noise. For cabin noise, the SEA technique was analytically extended and applied to Sikorsky S-92 sidewall and interior panel sections. This included a novel approach of coupling SEA and FEA for extending interior noise predictions to the mid frequency range. Good experimental agreement was achieved for component transmission losses, subsystem response, and interior acoustic levels. For jet noise, a comprehensive acoustic and flowfield database was generated for high subsonic jets, and a procedure for extrapolating model scale noise reduction concepts to full scale PNL was developed. In parallel, jet noise sources were studied with a linear phased array and turbulence probes. To accomplish source localization, a new phased array processing algorithm was developed which achieved a 20-dB sidelobe rejection and a 5-degree beamwidth for 1 to 33 kHz (Figure 1). Also, further LES calculations were performed for high velocity jet and diffuser flow, achieving good agreement with acoustic measurements for low to moderate frequencies.

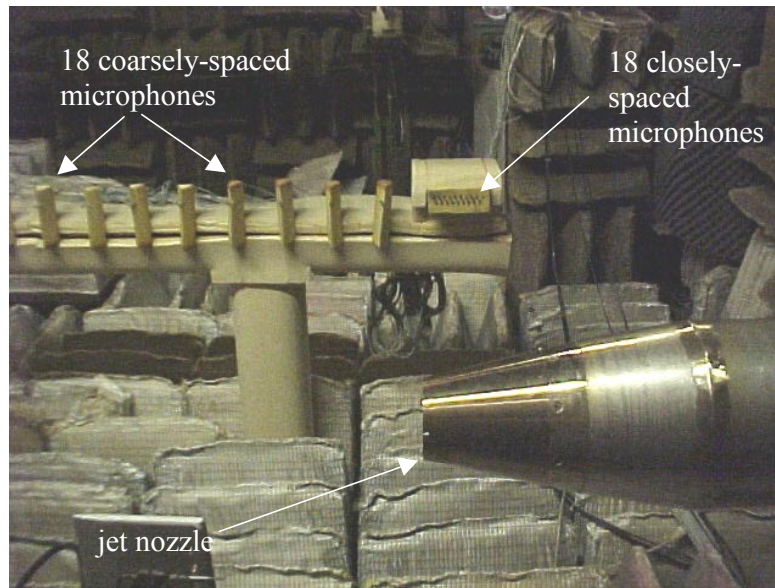


Figure 1: Photograph of UTRC's phased array with the jet model.